



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/771,047	02/02/2004	Kalin Sparious	PD-02W202	1523
7590 04/20/2009				
John E. Gunther Raytheon Company P.O. Box 902 (E1/E150) El Segundo, CA 90245-0902			EXAMINER NGUYEN, PHILLIP	
			ART UNIT 2828	PAPER NUMBER
			MAIL DATE 04/20/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/771,047

Applicant(s)

SPARIOSU ET AL.

Examiner

PHILLIP NGUYEN

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-8, 10, 11, 13, 16, 17, 20-24, 26-29, 31-40, 43-53, 55-57 and 59-63 is/are pending in the application.
- 4a) Of the above claim(s) 10, 11, 13 and 56 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5-8, 10, 11, 13, 16, 17, 20, 21, 57 and 59-63 is/are rejected.
- 7) ☒ Claim(s) 3, 22-24, 26-28, 31-40, 43-51, 55 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 1/23/2008 have been fully considered but they are not persuasive.

Applicant argues that collimating lens cannot be considered as beam flattening optics because it produces light whose rays are nearly parallel, and therefore will spread slowly as it propagates. Examiner disagrees with this argument because the claims fail to define how the beam flattening optics functions with respect to the whole invention. Light before entering the collimating lens are spreading in may different directions. Using a collimating lens to flatten the beams from a wide spread angles is considered as flattening those beams.

A few newly cited references for supporting the above assertion:

See Oda et al. (US 4847644 and 4731623) abstract and throughout the patent.

See Brown et al. (US 6259567) col. 5, lines 14-20.

Therefore the rejections are maintained.

Applicant further adds new claims 59-63. These claims are not allowable and rejected as follows:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 59-62 are rejected under 35 U.S.C. 102(e) as being anticipated by Feillens et al. (US 20040246570).

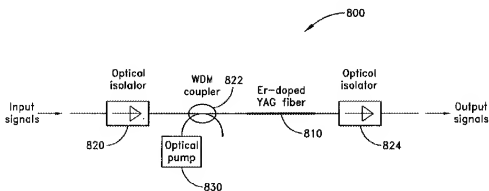


FIG. 8

With respect to claims 58-60, Feillens discloses in Fig. 8 a laser comprising an erbium YAG fiber laser medium 810 and means for directly pumping said medium with a laser diode 830 (see paragraph 0078).

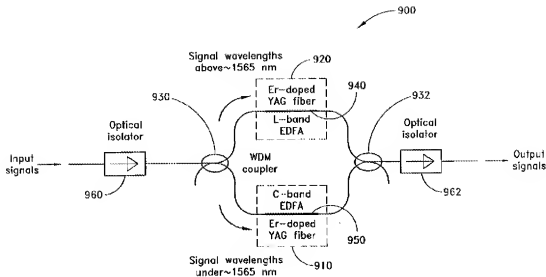


FIG. 9

With respect to claim 61, Feillens further discloses in Fig. 9 a second embodiment similar from the first embodiment as shown in Fig. 8. The Fig. 9 illustrates the laser medium includes a plural fibers 940 and 950 and said means form pumping includes a high power laser pump source coupled each of said fibers (paragraph 0093).

With respect to claim 62, Feillens discloses in paragraph 0078 the pump source comprising pigtailed laser diode. Therefore it is believed that the pump sources used in Fig. 9 should be the same.

Claim Rejections - 35 USC § 103

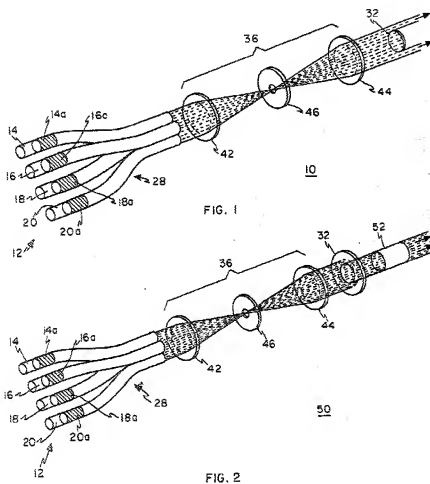
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

Art Unit: 2828

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-2, 5-7, 16, 20, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rediker (US 4479224) in view of Miers (US 5872627).



With respect to claims 1 and 20, Rediker discloses in Fig. 1-2 a laser system comprising a plurality of laser fibers 28; a high power pump source 14, 16, 18, 20 coupled to each of said laser fibers; and an external cavity (defined by fiber end and reflector 32) having an optical axis, said

external cavity having a first lens 42, a single aperture 46, a second lens 44, and a mirror 362 located at focal points of the first and second lenses.

However, Rediker does not disclose beam-flattening optics.

Miers discloses in Fig. 1 (shown below) an optical apparatus having a spatial filter and a beam-flattening optics 158.

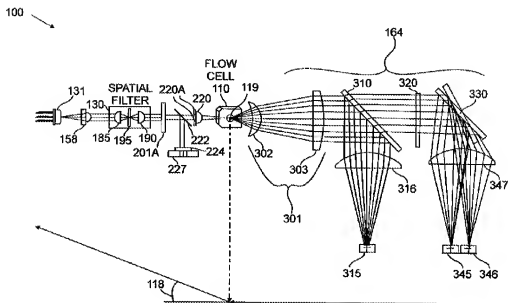


FIG. 1

It would have been obvious to one skill in the art at the time the invention was made to provide the beam-flattening optics as taught by Miers to Rediker in order to reduce loss of laser beam due to the beam divergence from the laser diode 131. Also see col. 24, lines 19-40.

It is noted that in the instant application, applicant asserts that beam flattening optics are well known in the art, and one skilled in the art with access to the present teachings may construct the array of beam-flattening optics 20 without undue experimentation (page 13, lines 1-

5). Therefore, it is strongly believed that adding beam flattening optics as claimed is neither novel nor inventive.

With respect to claim 2, Rediker discloses the laser system outputs an eye-safe laser beam of 1.5 microns (col. 4, lines 31-42).

With respect to claim 5, Rediker discloses each of said high power laser pump sources include a laser diode (col. 3, lines 11-13).

With respect to claim 6, Rediker discloses the claimed invention except for discrete imaging optics. In Fig. 4 of the present application, focusing lens 70 is designated as discrete imaging optics. Hamilton further discloses discrete imaging optics 1319 being end-coupled via the laser pump source 1301. It would have been obvious to the one having ordinary skill in the art at the time the invention was made to provide a discrete imaging optics as taught by Hamilton to Rediker in order to reduce the divergence (paragraph 0071).

With respect to claim 7, Rediker discloses the pump sources 14, 16, 18, and 20 are coupled via a reflective cavity.

With respect to claim 16, since Rediker discloses the fiber bundle being used as "cavity end", the ends are considered as integrated reflectors.

With respect to claim 57, since Rediker discloses the product shown in the rejection of claim 1, it is inherent product by process to perform the recited method.

2. Claims 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rediker (US 4479224) in view of Miers (US 5872627) and further in view Waarts et al. (US 6298187). Rediker and Miers disclose the claimed invention except for the laser fibers with differing

lengths differ in length from one another by more than 1.5 centimeters. Waarts discloses fibers with different lengths by at least 1.5 cm. It would have been obvious to one skill in the art at the time the invention was made to provide fibers with different lengths by at least 1.5 cm as taught by Waarts to provide different wavelengths.

3. Claims 16-17 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rediker (US 4479224) in view of Miers (US 5872627) and further in view of Jiang et al. (US 6982997).

With respect to claims 16-17, Rediker and Miers disclose the claimed invention except for a Bragg reflectors integrated in the laser fiber. Jiang discloses in Fig. 1 Bragg reflectors 14 integrated in the laser fiber 18. It would have been obvious to one skill in the art at the time the invention was made to provide the Bragg reflectors 14 as taught by Jiang in order to provide a feedback necessary to sustain the laser operation in the external cavity (col. 3, ln. 27-31).

With respect to claim 21, Rediker discloses said plural pump sources include diodes (14, 16, 18, and 20).

4. Claim 63 are rejected under 35 U.S.C. 103(a) as being unpatentable Feillens et al. (US 20040246570) in view of Sintov (US 20060133731). Feillens discloses the claimed invention except for explicitly teaches the pump sources are side coupled, edge coupled, fusion coupled, and/or coupled via a reflective cavity. Sintov discloses a high power fiber apparatus and further teaches side coupling the pump source with the fiber. It would have been obvious to one skill in the art at the time the invention was made to provide the pump sources as claimed coupled with

the fibers in any of these claimed methods because these methods are well known in the art. For instance, side coupling reduces the need for alignment of the pump source and the fiber, etc. (paragraph 0014).

Allowable Subject Matter

5. Claims 3, 22-24, 26-28, 31-40, 43-51 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 29, 31-40, 43-45, 46-53 are allowed.

The reasons for allowance were indicated in the previous Office Action.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phillip Nguyen whose telephone number is 571-272-1947. The examiner can normally be reached on 9:00 AM - 6:00 PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MINSUN HARVEY, can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/771,047

Page 11

Art Unit: 2828

/Phillip Nguyen/

AU 2828

/Minsun Harvey/

Supervisory Patent Examiner, Art Unit 2828